Claims

[c1] 1. A slot armor component for use in a rotor of a dynamo-electric machine, the slot armor component comprising a plurality of profile co-extruded polymer layers.

[c2] 2. A slot armor component as in claim 1 wherein a composite cross-section of the profile co-extruded layers includes a first leg portion and a second leg portion disposed at an angle to the first leg portion, the second leg portion being shorter and thicker than the first leg portion.

[c3] 3. A slot armor component as in claim 1 wherein a composite cross-section of the profile co-extruded layers includes a first leg portion and a second leg portion disposed at an angle to the first leg portion, the first and second leg portions having a uniform thickness.

[c4] 4. A slot armor component as in claim 1 wherein the plurality of profile co-extruded polymer layers includes a first polymer layer having a first glass-fill concentration and a second polymer layer arranged on one side of the first polymer layer having a second glass-fill concentration which is lower than the first glass-fill concentration.

[c5] 5. A slot armor component as in claim 4 wherein the plurality of profile co-extruded polymer layers further includes a third polymer layer having a third glass-fill concentration which is

lower than the first glass-fill concentration, the third polymer layer being arranged on an opposite side of the first polymer layer on which the second polymer layer is arranged.

[c6] 6. A slot armor component as in claim 1 wherein the plurality of co-extruded polymer layers includes a glass-filled polymer layer arranged between two unfilled polymer layers.

[c7] 7. A slot armor component as in claim 6 wherein the glass-filled polymer layer is a glass-filled Ultem layer, the glass-filled Ultem having a glass-fill concentration equal to or less than 30%.

[c8] 8. A slot armor component as in claim 7 wherein the two unfilled polymer layers each comprises an unfilled Ultem layer.

[c9] 9. A slot armor component as in claim 6 wherein the glass-filled polymer layer is a glass-filled polyetheretherketone (PEEK) layer, the glass-filled PEEK having a glass-fill concentration equal to or less than 30%.

[c10] 10. A slot armor component as in claim 9 wherein the two unfilled polymer layers each comprises an unfilled PEEK layer.

[c11] 11. A slot armor component as in claim 1 wherein the plurality of profile co-extruded polymer layers includes a first polymer layer having a non-uniform thickness and a second polymer layer having a uniform thickness.

[c12] 12. A slot armor component as in claim 11 wherein the plurality of profile co-extruded polymer layers further includes a third polymer layer, the third polymer layer having a uniform thickness, and wherein the first polymer layer is arranged between the second and third polymer layers.

[c13] 13. A composite material comprising a plurality of profile co-extruded high temperature polymer layers.

[c14] 14. A composite material as in claim 13 wherein the plurality of profile co-extruded high temperature polymer layers includes a first high temperature polymer layer having a first glass-fill concentration and a second high temperature polymer layer arranged on one side of the first high temperature layer having a second glass-fill concentration which is lower than the first glass-fill concentration.

[c15] 15. A composite material as in claim 14 wherein the plurality of profile co-extruded high temperature polymer layers includes a third high temperature polymer layer having a third glass-fill concentration which is lower than the first glass concentration, the third high temperature polymer layer being arranged on an opposite side of the first high temperature polymer layer on which the second high temperature polymer layer is arranged.

[c16] 16. A composite material as in claim 13 wherein the plurality of profile co-extruded high temperature polymer layers includes a

glass-filled high temperature polymer layer arranged between two unfilled high temperature polymer layers.

[c17] 17. A composite material as in claim 16 wherein the glass-filled high temperature polymer layer is a glass-filled Ultem layer, the glass-filled Ultem having a glass-fill concentration equal to or less than 30%.

[c18] 18. A composite material as in claim 17 wherein the two unfilled high temperature polymer layers each comprises an unfilled Ultem layer.

[c19] 19. A composite material as in claim 16 wherein the glass-filled high temperature polymer layer is a glass-filled polyetheretherketone (PEEK) layer, the glass-filled PEEK having a glass-fill concentration equal to or less than 30%.

[c20] 20. A composite material as in claim 19 wherein the two unfilled high temperature polymer layers each comprises an unfilled PEEK layer.

[c21] 21. A composite material as in claim 13 wherein the plurality of profile co-extruded high temperature polymer layers includes a first high temperature polymer layer having a non-uniform thickness and a second high temperature polymer layer having a uniform thickness.

[c22] 22. A composite material as in claim 21 wherein the plurality of profile co-extruded high temperature polymer layers further

includes a third high temperature polymer layer, the third high temperature polymer layer having a uniform thickness, and wherein the first high temperature polymer layer is arranged between the second and third high temperature polymer layers.

[c23] 23. A profile co-extrusion system comprising:

a first extruder for receiving and melting a first material;

a first profile extrusion die operatively coupled to the first extruder for receiving the first material melted by the first extruder and providing a first profile extruded layer;

a second extruder for receiving and melting a second material;

a second profile extrusion die operatively coupled to the second extruder for receiving the second material melted by the second extruder and providing a second profile extruded layer onto one side of the first profile extruded layer;

a third extruder for receiving and melting a third material;

a third profile extrusion die operatively coupled to the third extruder for receiving the third material melted by the third extruder and providing a third profile extruded layer onto a side of the first profile extruded layer which is opposite to the side on which the second profile extruded layer is provided; and

a calibrator for receiving and cooling the first, second and third profile extruded layers.

[c24] 24. A profile co-extrusion system as in claim 23 wherein the first profile extrusion die comprises a plate having a first slot and a second slot defined therein for passing the first material passing therethrough and a mandrel inserted into the second slot of the plate for restricting a flow rate of the material passing through the second slot.

[c25] 25. A profile co-extrusion system as in claim 23 wherein the second and third profile extrusion dies receive the first profile extruded layer at a first flow rate and the second and third profile extrusion dies each has a land having a length so that the respective flow rates of the second and third profile extruded layers onto the first profile extruded layer match the first flow rate.